

WEATHER, FORECASTS, AND WARNINGS FOR THE MONTH.

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Barograms for the month showed an increased activity in the great centers of action, not only in the amplitude of the changes but in their rate of progression as well, which latter was particularly noticeable in the United States. This condition was but natural, in view of the very rapid fluctuations over the British Isles and Iceland, which are almost directly in the normal North Atlantic storm track. On the other hand, that part of the Continent of Europe between the parallels of latitude 35° and 45° was remarkably free from barometric changes of even moderate intensity, and exceptionally warm weather without much rain was consequently experienced in that region. The only storm of importance that passed over the district just referred to occurred on the 21st and 22d, causing snow in parts of France and severe local storms at several ports on the Mediterranean Sea.

The Icelandic area was the seat of rapid fluctuations, pressure being low on the 1st, 5th, 11th, 16th, 20th, and 24th, and high on the 9th, 14th, 18th, and 30th. The lowest reading of the month was 28.62 inches on the 24th.

Pressure over the Azores was relatively steady; it being low, however, on the 2d, 10th, 17th, and 24th, and relatively high on the 21st and 28th. The storm of the 10th was accompanied by destructive winds, considerable damage being reported from some of the islands.

The Alaskan area was characterized by relatively high pressure during the latter half of the month, particularly from the 17th to the 23d. Low pressure occurred about the 7th, 11th, and 14th. The reports for the last few days of the month are missing on account of interrupted cable communication due to the occurrence of a severe earthquake on the 22d.

Honolulu pressure was low on the 5th, 9th, 12th, 21st, 24th, and 30th, and high on the 4th, 7th, 10th, 15th to the 17th, and on the 26th. The principal low of the month was that of the 20th to the 22d. During the remainder of the month pressure was about normal.

Pressure in the Siberian area was low on the 1st, 6th, 9th, 13th, 20th, and 23d, and high on the 5th and 11th, and from the 24th to the 30th, inclusive. A number of storms occurred along the east coast of Asia, the one on the 9th being the most severe. A typhoon was reported in the vicinity of Manila on the 27th.

The month opened with temperatures nearly normal in all parts of the United States, there being, however, a slight excess in New England, the North Atlantic States, the Ohio Valley, and the lake region, and elsewhere a deficiency. During the first few days of the month cool weather prevailed generally from the Rocky Mountains eastward, in contrast to the comparatively high temperatures which prevailed at the end of the preceding month in eastern and southern portions of the country.

From the 1st to the 4th an area of low barometric pressure moved along the northern border attended by scattered showers and followed by a change to slightly cooler weather.

The following weekly forecast was issued Sunday, the 3d:

There are no indications at this time of a tropical disturbance in South Atlantic waters, nor is the pressure distribution over the Atlantic Ocean favorable to storm formation in that region during the next several days.

In the United States the coming week will be one of fair weather generally, except for a short period of unsettled weather and showers attending the eastward movement of a barometric depression that is now forming over the western plateau region; this disturbance will be over the Rocky Mountain region Monday, cross the great central valleys on Tuesday or Wednesday, and the Eastern States Thursday or Friday. It will be preceded by rising temperature and be followed by a change to considerably cooler weather, which will cause frosts in all probability in the northern Rocky Mountain region and the Northwestern States by the middle of the week. In the Eastern States cool weather will prevail at the beginning of the week, followed by rising temperature Wednesday and Thursday and a reaction to lower temperature at the close of the week.

On the morning of the 3d the pressure at Willemstadt, Curaçao, was 29.84 inches, showing a fall of 0.10 inch in 24 hours, and on the morning of the 5th a further fall of 0.04 inch was reported. At 6 p. m. of the latter date a reading of 29.76 inches was recorded and advices were accordingly issued to shipping. Although there were plainly evidences of a tropical disturbance, no reports of severe winds or other indications of destructive storm energy have been reported in the region of the Antilles. A cable report, however, from Corinto, Nicaragua, dated the 12th, states that a hurricane struck that city, causing the death of 10 and injury to 50 persons. Eight city blocks, comprising 250 houses, were razed to the ground with an estimated loss of \$2,000,000. It is quite probable that this storm and the one noted in the West Indies on the 5th were one and the same. A low-pressure area over northwestern Montana on the 3d moved to northwestern North Dakota by the morning of the 4th, attended by general and copious rains. On the 5th it was central over southeastern Minnesota and by the morning of the 6th had moved to the Province of Quebec. This disturbance was attended by general showers and thunderstorms over almost the entire country east of the Rocky Mountains. Another disturbance moved from the Middle Plateau on the 5th to southeastern Nebraska on the 6th. It had advanced to Illinois by the morning of the 7th with diminishing intensity and was not traceable thereafter on the weather charts. For several periods following, however, evidence of a disturbance was indicated by rains in the Ohio Valley, the northern portion of the Middle Atlantic States, and New England. Advisory warnings were issued for the upper Lakes in connection with this storm on the morning of the 6th, and on the afternoon of that date northwest storm warnings were ordered for Lake Superior and the northern portions of Lakes Michigan and Huron, and advisory warnings for southern Michigan and southern Huron. Brisk to high winds occurred over the upper Lakes and severe local storms are reported to have occurred at a number of

localities in that region. Fairly general rains were reported in connection with the storm just mentioned in central and northern districts. Following this storm, an area of high barometer appeared in the northwest, and on the morning of the 7th was central over the Province of Manitoba. It caused frosts in parts of Washington and Montana and at several Canadian stations, and the following morning frosts were reported in Montana and Wyoming, warnings of which had been previously issued.

For the week, as a whole, precipitation was the most widespread of the season, nearly all of the great agricultural districts east of the Rocky Mountains receiving from 1 to 2 inches. Over the Middle and Southern Plateau, however, precipitation was deficient. Temperatures averaged above the normal, except for central and southern districts, east of the Rocky Mountains, and elsewhere below the normal. Over the principal agricultural regions temperatures were generally high for the season, not being below 50° over large portions of the corn-growing States or below 70° in the cotton region.

On Sunday the 10th the following weekly forecast was issued:

There are no indications at the present time of a disturbance in south Atlantic waters.

In the United States the coming week will be one of generally fair weather and normal temperature over the greater part of the country. Occasional showers, however, are probable along the Gulf and south Atlantic coasts and in the North Pacific States. The next barometric depression of importance to cross the United States will appear in the northwest on Wednesday, pass eastward over the Middle West about Thursday or Friday, and the eastern States near the close of the week; it will be attended by local rains and be followed by a change to cooler weather over the northwest and the central valleys.

Attending a poorly defined disturbance that was central over Kansas on the morning of the 10th, an area of showers spread rapidly eastward during the 10th and 11th to the Middle Atlantic coast. An area of low barometer, central north of Minnesota on the 11th, increased in intensity and moved to the mouth of the St. Lawrence by the 12th, with lowest reported pressure 29.30 inches at Father Point. Its advance was attended by showers throughout the lake region and the northern portion of the Middle Atlantic and New England States. On the morning of the 12th advisory warnings of high winds were issued for the Atlantic coast from Norfolk to Eastport. Following the passage of this low, an area of high pressure advanced from North Dakota on the evening of the 11th to eastern Pennsylvania by the morning of the 14th, and thence moved northeastward, causing much cooler weather. Frosts were reported in upper Michigan, northern New York, and in New England, except on the coast, being particularly destructive to the Connecticut tobacco crop. From the 14th to 16th a low-pressure area passed through southern Canada, skirting our immediate northern border, and was attended by good rains in the northern tier of States from the upper Mississippi Valley eastward. In connection with this storm, advisory warnings were issued for the upper Lakes during the afternoon of the 14th, and later the same afternoon were extended to include Lake Erie. At 9.45 a. m. of the 15th, advisory warnings of brisk to high winds were disseminated along the Atlantic coast from Philadelphia to Eastport, and brisk to high winds were reported over the area covered by the advices. On the morning of the 16th a decided fall in barometer set in over the West Indies, a fall of 0.14 inch in 36 hours being indicated at one station and of 0.12 inch at another. Although the center of the disturbance and its intensity were not definitely known, the following advices were

sent to stations in the West Indies and to ports on the Atlantic and Gulf coasts:

Some indications disturbance south of Haiti. Vessels bound for western portion Caribbean Sea should be cautious.

On the morning of the 17th advices were disseminated placing the center of the disturbance south-southwest of Jamaica. On the 18th the following was issued to ports on the Atlantic and Gulf coasts from Boston to New Orleans:

Indications disturbance in Caribbean Sea is west of Jamaica and approaching Yucatan Channel. Intensity unknown.

At Habana a wind velocity of 32 miles an hour from the northeast was reported as having occurred during the night of the 17th-18th. No further evidence of this storm has been reported.

Temperatures for the week ending the 18th were generally above normal, except in a large portion of the Plateau region, the North Pacific, and the Northeastern States. The minimum temperatures in the North Atlantic States on the morning of the 14th were as low as or lower than had occurred during the second decade of September in the last 40 years, while in Kansas a maximum of 100° was reported. A newspaper clipping from Kansas City states that on the 13th it was necessary to dismiss the school children on account of the heat. Precipitation for the week was light over large portions of the lake region and the Ohio and middle Mississippi valleys; elsewhere it was above normal. Falls of from 4 to 8 inches occurred in southeastern Kansas and southwestern Missouri. There are indications that the secondary low which developed over southern New England during the night of the 15th-16th moved southeastward and passed over Bermuda during the 17th, with barometer reading at 8 p. m. of that date 29.64 inches. With this storm at Bermuda and a high pressure area on the Atlantic coast centered at Father Point with a pressure of 30.34 inches, northeast storm warnings were issued on the afternoon of the 18th for the New England coast. A velocity of 48 miles from the northeast was reported at Nantucket the evening of the 18th and again on the morning of the 19th. Although no other verifying velocities were reported, winds approximating the verifying velocities occurred at Weather Bureau stations along the New England coast, and off the coast winds of storm force were undoubtedly experienced.

The following weekly forecast was issued Sunday the 17th:

The barometric pressure is low and falling at West Indian stations, and conditions are favorable to the formation of a disturbance in that region. There were indications Saturday and Sunday that a storm was in the early stages of development in the Caribbean Sea east of Jamaica and south of Haiti. Vessel masters at Atlantic and Gulf ports have been advised to this effect.

In the United States during the coming week the weather will be unsettled, with sharp changes in temperature over northern and central districts. A disturbance that is now over the plains States will advance eastward, preceded by warm weather and followed by a change to cooler weather, which will likely cause frosts by the first part of the week in the Northwestern States and by Wednesday in the Lake region, the upper Mississippi Valley, and the northern-plains States. It will be attended by showers Monday in the great central valleys and Monday night or Tuesday in the Middle Atlantic and New England States. The next disturbance to cross the country will appear in the Northwest Wednesday, whence it will advance eastward, preceded by rising temperature, attended by local rains, and followed by a pronounced change to lower temperature; this disturbance will cross the Middle West Thursday or Friday and the Eastern States near the close of the week.

A disturbance appeared in the Canadian Northwest on the evening of the 15th; by the evening of the 16th it had

moved to the Dakotas, and on the evening of the 17th it was central over the upper Mississippi Valley. On the morning of the 18th this depression was central in the middle Mississippi Valley, while another low-pressure area had appeared at Winnipeg. The latter storm on the 19th was north of Lake Ontario and by the morning of the 20th had moved to the Canadian maritime Provinces. In connection with this storm showers and thunderstorms occurred in the upper Mississippi and Ohio Valleys and the lake region. Following this storm a high-pressure area advanced from the north Pacific coast on the morning of the 17th to the northern plateau on the following day. It passed thence to Kansas on the 19th and was central in the western lake region on the morning of the 20th and in northern New England on the 21st. Attending a pressure fall over the northern Rocky Mountain region, another low-pressure area developed during the night of the 20th over Nebraska, accompanied by general showers. On the morning of the 21st it was central over southern Lake Michigan. Thence it passed eastward, attended by well-distributed rains in northern and central States from the Mississippi Valley to the Atlantic seaboard. This low was followed by an area of high pressure attended by a change to cooler weather, light frost being reported in the northern part of the peninsula of Michigan on the morning of the 22d. A disturbance moved slowly eastward from the northern plateau and appeared on the night of the 23d in the form of a trough extending from Lake Michigan southwestward to the Texas Panhandle. It passed off the New England coast during the early morning of the 26th. Very little precipitation occurred within its immediate vicinity, but an area of showers and thunderstorms developed in its rear and advanced from the northern and middle Mississippi Valley on the morning of the 24th to the New England coast on the evening of the 26th. Following this disturbance cooler weather and high pressure prevailed, frost being reported on the morning of the 26th in Minnesota, northern Wisconsin, and upper Michigan and on the 27th in parts of eastern Pennsylvania, eastern New York, and New England.

For the week ending the 25th, temperatures averaged above normal in southern and eastern districts, while from the upper Mississippi Valley westward to the Pacific temperatures were almost continuously below normal the entire week. Precipitation for the country as a whole was unusually small in amount.

The following weekly forecast was issued Sunday, the 24th:

While there are no indications Sunday morning of a disturbance in South Atlantic waters, the general distribution of barometric pressure over middle and higher latitudes of the Atlantic Ocean portends threatening conditions the coming week in that region.

In the United States the coming week will be one of unsettled weather and well-distributed rains over the greater part of the country. Temperatures will average below the seasonal normal over practically the entire country east of the Rocky Mountains, and there is a likelihood of frost in northern districts. The principal disturbance of the week will develop over the western plateau Monday or Tuesday, cross the great central valleys Tuesday or Wednesday and the Eastern States Thursday or Friday. It will be attended by general rains and be followed by colder weather, except on the east Gulf and South Atlantic coasts.

A disturbance of pronounced character that is central in the region of Iceland, where the barometer reads 28.62 inches, will cause stormy weather over the British Isles and western Europe during the next several days.

The next disturbance appeared in Alberta on the evening of the 25th, moved to Saskatchewan by the morning of the 26th, and on the 27th was central at White River, attended by showers and thunderstorms in

the lake regions and eastern Iowa. Advisory warnings of brisk to high winds over Lakes Huron, Erie, and Ontario were distributed the afternoon of the 27th. By the morning of the 28th this storm had moved to Nova Scotia, causing showers in New York, Pennsylvania, and New England. It was closely followed by an area of high pressure, which caused light frost in northwestern North Dakota on the morning of the 27th, in the northwestern upper lake region on the 28th, and in northern New England on the 29th. The evening weather map for the 27th showed the development of a slight disturbance over the middle slope of the Rocky Mountains. It passed northeastward and by the evening of the 28th was central over Iowa, showers and thunderstorms being reported over the Plains States, the upper Mississippi Valley, and the upper lake region. On the morning of the 29th the storm was over the eastern portion of the Province of Ontario. Southwest storm warnings were accordingly ordered the morning of that date for the New England coast from New Haven to Eastport and at noon were extended southward along the coast to Delaware Breakwater. On the evening of the 29th the storm center was near Cape Cod and increasing in intensity, and by the evening of the 30th had moved to a position east of Nova Scotia, with lowest reported barometer reading 29.26 inches. On the morning of the 28th the Pacific high-pressure area had pushed inland on the north Pacific coast, and, following the eastward passage of the low immediately before mentioned, a center of high pressure broke off, and on the morning of the 29th was central over the Dakotas. Frosts were reported in Idaho, North Dakota, and Montana, and freezing temperatures in Wyoming, warnings of which were disseminated the previous morning. This high moved rapidly eastward, causing decidedly cooler weather over northern and central districts. At the close of the month the high was central over the lower lake region, while a low of moderate intensity was central over the Plains States, attended by showers and thunderstorms generally from the Mississippi Valley westward to the Rockies, and also in the eastern portions of the southern and central plateau region. The month closed with temperatures in the Gulf States above the normal, while elsewhere they were below the seasonal average, being as much as 10° to 18° below in portions of the plateau region.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England.....	12	59.9	-0.8	+ 3.9	+0.4
Middle Atlantic.....	15	63.7	+1.6	+ 9.5	+1.1
South Atlantic.....	10	77.8	+4.7	+17.6	+2.0
Florida Peninsula ¹	9	81.4	+2.1	+ 2.1	+1.4
East Gulf.....	11	80.8	+6.0	+25.0	+2.8
West Gulf.....	11	81.8	+6.1	+28.8	+3.2
Ohio Valley and Tennessee.....	14	72.9	+4.7	+21.4	+2.4
Lower Lakes.....	11	62.9	-0.2	+12.9	+1.4
Upper Lakes.....	13	58.9	-0.2	+21.2	+2.4
North Dakota ¹	9	54.4	-1.9	- 1.5	-0.2
Upper Mississippi Valley.....	14	67.1	+2.3	+24.4	+2.7
Missouri Valley.....	12	69.0	+3.7	+30.5	+3.4
Northern slope.....	10	56.6	-0.8	+ 3.0	+0.3
Middle slope.....	6	73.0	+5.4	+28.4	+3.2
Southern slope ¹	8	79.3	+6.4	+31.5	+3.5
Southern plateau ¹	9	80.3	+2.0	+ 1.7	+0.2
Middle plateau ¹	10	60.3	0.0	+ 3.6	+0.4
Northern plateau ¹	11	56.5	-2.5	- 5.4	-0.6
North Pacific.....	7	55.3	-1.6	-10.8	-1.2
Middle Pacific.....	5	61.8	-2.6	-13.3	-1.5
South Pacific.....	4	67.2	-0.8	- 1.4	-0.2

¹ Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England.....	11	2.64	84	-0.5	-4.3
Middle Atlantic.....	15	2.03	61	-1.3	-5.4
South Atlantic.....	11	3.58	76	-1.1	-15.7
Florida Peninsula ¹	8	3.46	47	-3.9	-13.10
East Gulf.....	11	2.74	69	-1.2	-6.4
West Gulf.....	10	2.52	74	-0.9	-5.1
Ohio Valley and Tennessee.....	13	4.19	150	+1.4	-1.8
Lower Lakes.....	10	3.76	131	+0.9	-0.2
Upper Lakes.....	13	3.96	125	+0.8	-0.7
North Dakota ¹	9	2.23	137	+0.6	+0.8
Upper Mississippi Valley.....	15	6.97	195	+3.4	-0.5
Missouri Valley.....	12	4.15	151	+1.4	-5.2
Northern slope.....	9	1.95	186	+0.9	-1.2
Middle slope.....	6	2.78	140	+0.8	-2.9
Southern slope ¹	8	1.60	59	-1.1	-4.8
Southern plateau ¹	9	1.70	155	+0.6	+2.6
Middle plateau ¹	11	1.45	138	+0.4	+0.8
Northern plateau ¹	11	0.99	100	0.0	-2.3
North Pacific.....	7	3.55	139	+1.0	+7.7
Middle Pacific.....	7	0.15	27	-0.4	+3.1
South Pacific.....	4	0.34	142	+0.1	+7.5

¹ Regular Weather Bureau and selected cooperative stations.*Average relative humidity and departure from the normal.*

Districts.	Average.	Departure.	Districts.	Average.	Departure.
New England.....	81	0	Upper Lakes.....	81	+4
Middle Atlantic.....	80	+3	North Dakota.....	78	+12
South Atlantic.....	83	+3	Upper Mississippi Valley.....	81	+9
Florida Peninsula.....	76	-5	Missouri Valley.....	74	+8
East Gulf.....	80	+4	Northern slope.....	64	+9
West Gulf.....	75	+1	Middle slope.....	62	+4
Ohio Valley and Tennessee.....	79	+7	Southern slope.....	64	+1
Lower Lakes.....	77	+4	Southern plateau.....	52	+13

Average relative humidity and departure from the normal—Continued.

Districts.	Average.	Departure.	Districts.	Average.	Departure.
Middle plateau.....	45	+7	Middle Pacific.....	66	-1
Northern plateau.....	49	-3	South Pacific.....	66	0
North Pacific.....	82	+10			

Average cloudiness and departure from the normal.

Districts.	Average.	Departure.	Districts.	Average.	Departure.
New England.....	5.7	+0.5	Missouri Valley.....	5.1	+1.1
Middle Atlantic.....	5.2	+0.6	Northern slope.....	5.1	+1.1
South Atlantic.....	4.8	+0.1	Middle slope.....	4.2	+0.8
Florida Peninsula.....	4.3	-1.0	Southern slope.....	3.0	-0.8
East Gulf.....	4.2	-0.4	Southern plateau.....	3.4	+0.9
West Gulf.....	3.2	-1.0	Middle plateau.....	3.8	+0.9
Ohio Valley and Tennessee.....	5.2	+0.8	Northern plateau.....	4.7	+1.1
Lower Lakes.....	5.0	+0.2	North Pacific.....	6.6	+1.3
Upper Lakes.....	5.4	+0.2	Middle Pacific.....	3.4	0.0
North Dakota.....	5.5	+1.1	South Pacific.....	3.0	+0.4
Upper Mississippi Valley.....	6.1	+1.8			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Alpena, Mich.....	28	51	se.	Point Reyes Light, Cal.....	2	72	nw.
Chicago, Ill.....	18	59	sw.	Do.....	3	65	nw.
Mount Tamalpais, Cal.....	3	76	nw.	Do.....	4	61	nw.
Do.....	4	60	nw.	Do.....	5	32	nw.
Do.....	8	50	nw.	Do.....	8	50	nw.
Do.....	30	62	nw.	Do.....	15	54	nw.
New York, N. Y.....	30	62	n.	Do.....			
North Head, Wash.....	14	56	se.	Southeast Farallon, Cal.....	3	50	nw.